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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/771,020

02/03/2004

Gary R. Janik

58940.US

3540

60838

7590

10/13/2006

LNG/KLA JOINT CUSTOMER  
C/O LUEDEKA, NEELY & GRAHAM, P.C.  
P.O. BOX 1871  
KNOXVILLE, TN 37901

EXAMINER

PHAM, HOA Q

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/771,020	<b>Applicant(s)</b> JANIK ET AL.	
	<b>Examiner</b> Hoa Q. Pham	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 and 16-20 is/are allowed.
- 6) ☒ Claim(s) 9, 10 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/3/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because the "boxes" such as "10", "30", "40", etc... in figures 1-4 are not labeled in "text" such as "laser" for "box 10". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Allowable Subject Matter***

2. The indicated allowability of claim 9 is withdrawn in view of the newly discovered reference(s) to Kawashima (5,602,400). Rejections based on the newly cited reference(s) follow.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wasserman (6,222,630) in view of Lorenz (4,708,483) and Kawashima 95,602,400).

Regarding claims 9-10 and 15, Wasserman discloses a system (100) for inspecting potentially warped printed circuit board assembly (118) comprises steps of: directing an incident light beam (114) at an inspection grid of points on the substrate (118) where the points are selected so that the projected light within the viewing field (116) forms a low-distortion line of laser light on the surface of the substrate (118) (column 4, lines 26-33); receiving the imaged beam with cameras (106, 108, 110); measuring displacement between actual landing locations of the segments and expected landing locations (column 4, lines 58-67; column 5, lines 1-9 and column 6, lines 59-67); deriving the topography (i.e., warp, defects) of the substrate (118) from the displacement measurement (figures 1 and 2a-2c). Wasserman does not explicitly teach

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that the light beam is a collimated light and the cameras are position sensitive detector; however, such the features are known in the art as taught by Lorenz. Lorenz teaches the use of a triangulation system in which the light beam is substantially collimated (column 5, lines 12-13) and the position sensor is a CCD for determining the displacement of the surface (2) (column 5, lines 64-67 and claim 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the light source and cameras of Wasserman by a collimated light source and position sensor as taught by Lorenz. The rationale for this modification would have arisen from the fact that both Lorenz and Wasserman are from the same field of endeavor; their devices are used for detecting the position and displacement of an objective. Thus, a substitution one for another is generally recognized as being within the level of ordinary skill in the art. Wasserman teaches the use of a laser source in infrared wavelength range (column 4, lines 10-15 and column 5, lines 34-42) and does not explicitly teach that the **light source comprises of more than one wavelength**, however, such a feature is well known in the art, for example, as taught by Kawashima. Kawashima, from the same field of endeavor, discloses a method for measuring a topography of a substrate in which the light source to be used is white light source or an illumination unit arranged to emit light of different wavelengths (column 5, lines 37-47). Thus, since both references determines the position of the substrate, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the light source of Wasserman by a light source of Kawshima.

Regarding claims 13-14, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Wasserman a galvo driven mirror and an acousto-optic modulator for the purpose of scanning the light beam on the surface to be tested, thus the whole surface is detected.

***Allowable Subject Matter***

5. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 1-8 and 16-20 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter: There was no prior art found by the examiner that suggested modification or combination with the cited art so as to satisfy the combination of all the limitations in claims 1 and 16.

As to claims 1 and 16, the prior art of record, taken alone or in combination, fails to disclose or render limitations **“compiling a database of displacement measurements; examining at least two displacement measurements in the database; correcting at least one displacement measurement for effects of a pattern induced anomaly in the displacement measurements and producing an adjusted database; and deriving the surface characteristics of the substrate from the adjusted database”**, in combination with the rest of the limitations of claims 1 and

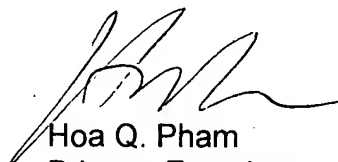
16.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kosugi (6,984,838) discloses a surface position detection apparatus and method in which the light source is more than one wavelength (column 5, lines 19-35).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on 7:30AM to 6 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Hoa Q. Pham  
Primary Examiner  
Art Unit 2877

HP  
October 11, 2006